

Wyoming Community College Commission
Request for
New, Pilot or Revised Degree or Certificate

A. College: Laramie County Community College

B. Date submitted to WCCC: _____

C. Program

1. Request for:

New Program Pilot Program Revised Program

2. **Program Title:** Heating, Ventilation, and Air Conditioning/Refrigeration – Advanced HVAC/R Technician

3. Degree or Certificate to be awarded:

Degree: AA AS AAS Other
 Certificate

4. Educational Pathway:

Energy Construction Hospitality Technology Health Care
 other

5. Total number of credit hours: 17

5. Suggested CIP (Classification of Instructional Program) code (6-digit):
47.201

6. Planned semester/year new program will begin: Fall 2015

8. Will any part of this program be provided by non-accredited vendor(s)?

YES (Provide details) NO

Will all or part of this program be available to students via online or other distance education technologies?

___ At the start of the program? ___ Within three years of the start of the program? No

D. Program description as it will be included in college catalog:
(Type description here)

The energy efficient Heating, Ventilation and Air Conditioning/Refrigeration (HVAC/R) program is designed for students who want to gain valuable industry skills and also want to pursue a basic academic foundation. The Associate of Applied Science degree includes general education requirements; HVAC/R installation, repair, maintenance knowledge and skills; thermal dynamics, fluid dynamics and electrical topics—all of which are combined to provide the groundwork for direct industry employment. For individuals desiring faster entry into the workforce, Basic and Advanced HVAC/R Technician Certificates are offered.

1. Expected Student learning outcomes from completion of the program: Students will be able to:

- Use safety rules and regulations that characterize responsible behavior in an HVAC/R workplace.
- Safely handle and/or operate HVAC/R hand tools, power tools, fasteners and refrigerants.
- Explore the use of control systems in HVAC/R equipment.
- Determine electrical characteristics as related to HVAC/R equipment.
- Predict the various uses of motors and motor control circuits in HVAC/R equipment.
- Investigate energy efficient methods and systems that are incorporated in the HVAC/R industry.
- Predict the operational condition of HVAC distribution systems.
- Apply customer service skills to HVAC/R installation and service work.
- Determine installation, repair, and maintenance procedures for commercial refrigeration systems.
- Determine installation, repair, and maintenance procedures for residential and light commercial air conditioning systems.
- Determine installation, repair, and maintenance procedures for residential and light commercial heating systems.

2. Program Layout by Semester

HVAC 1650	Residential Air Conditioning Systems	3
HVAC 1660	HVAC Distribution Systems	3
HVAC 1640	Automatic Building Controls	3
HVAC 1670	Light Commercial Refrigeration Systems	3
IST 1780	Electric Motors	2
IST 1781	Electric Motor Circuits	1
IST 1770	Motor Controls	1
IST 1771	Motor Control Circuits	1
Total Program Semester Hours		17

E. New course prefixes:

1. Recommended Level of Instruction if the community college is using a new course prefix:

_____ No new prefixes

3 Suggested level of instruction

2. New Course prefixes, numbers and titles have been coordinated:
with UW (transfer) _____ Yes _____ No X Not Applicable
or WCCC (career technical) X Yes _____ No _____ Not Applicable

F. New course descriptions:

The following are course descriptions for each new course in the program (include prefix, course number, title, credit hours and description):

This program includes current courses. No new courses were created for this program.

- G. Can this program be delivered by current faculty?** If not, what are the plans, budget and timeline for bringing on needed instructors?

Yes.

H. Summary of input from and coordination with citizens, business and industry or k-12 education:

The LCCC HVAC/R program has been in existence since late 2009 and has been joined by industry from that time to help create a skilled HVAC/R workforce for Southeastern Wyoming. Members of the community include: the Chief Building Inspector for the City of Cheyenne, Bureau of Apprenticeship representatives, personnel from FE Warren AFB, LCSD#1 Career and Technical Educational Coordinator as well as several local HVAC business owners. The original plan was for the LCCC program to offer one nine month certificate as well as an AAS in Heating, Ventilation, Air Conditioning and Refrigeration. However, as the program has moved forward, industry has indicated that two years is too long. In order to meet the needs of local industry, LCCC has now added a second certificate (the Advanced HVAC/R Technician Certificate). Four local industry owners have agreed to conduct interviews with all graduates of this program.

- I. Resources required** to start and sustain the program and the current plan to meet those resource needs through college or other external funds:

This program is funded as a current course of study at LCCC.

- J. Projected demand in Wyoming and Nation** for five years from the proposed implementation date (career technical programs):

Nationally, the trend for continues to show a short fall of 15% to 21% between now and 2022. The need in Wyoming and surrounding areas is increasing.

1. State and National Trends

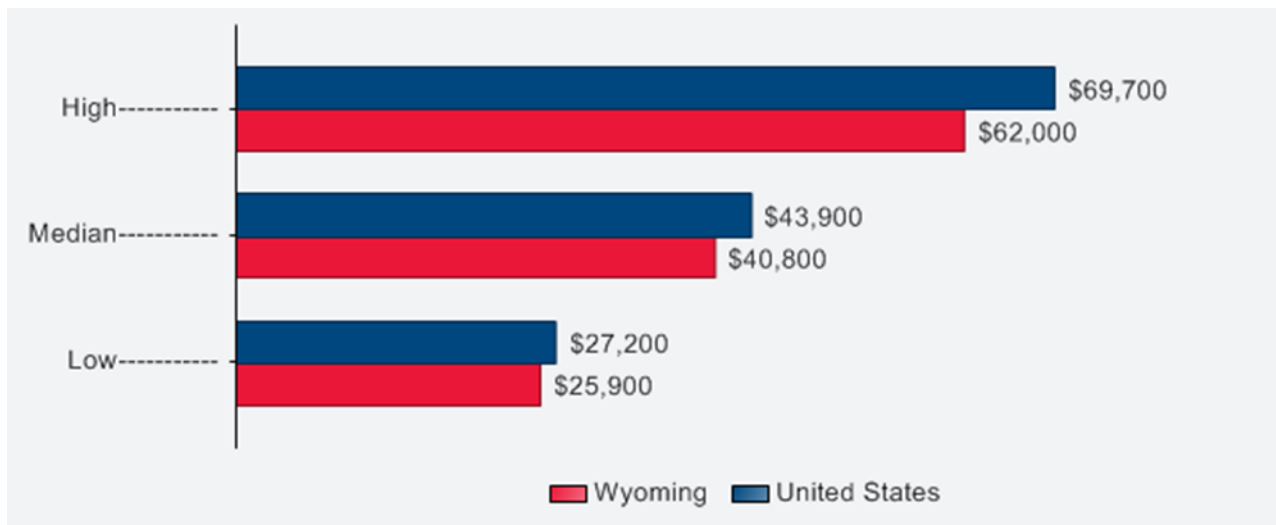
United States	Employment		Percent Change	Job Openings
	2012	2022		
Welding Technician	267,600	323,500	+21%	12,370
Wyoming	Employment		Percent Change	Job Openings
	2012	2022		
Welding Technician	580	730	+26%	30

Source:

- **National Data Source:** Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2010-11 Edition*, Fitness Workers, on the Internet at <http://www.bls.gov/oco/ocos287.htm>
- **State Data Source:** Wyoming Department of Employment Research & Planning

Other trend information that would assist the Commission:

2. State and National Wages



Source: [Bureau of Labor Statistics, Occupational Employment Statistics Survey](#)

Source: Occupational Information Network (O*NET OnLine), <http://www.onetonline.org/link/summary/49-9021.01>

Other wage information or comments that would assist the Commission:

3. Primary student audience identified for this program:

For LCCC, we anticipate targeting several different groups within the community, including incumbent workers who are currently in the HVAC/R field and want to or are required to expand their knowledge; those that are seeking advancement opportunities; displaced workers desiring retraining; poverty-to-self-sufficiency training

programs; and high school graduates who are interested in technical fields.

4. Anticipated enrollment in the three academic years after WCCC approval (unduplicated headcount) with the basis for the estimate:

15 Year One

15 Year Two

30 Year Three

K. Student recruitment and program marketing strategies to attract the broadest range of individuals for this particular program:

The community colleges will utilize industry contacts in HVAC/R to identify and recruit students currently in the workforce who need to update their skills. Industry partners are very supportive and have committed to referring students to the community colleges. We plan to market to Department of Workforce Services, high school counselors and students, veterans and transitioning military personnel, poverty to self-sufficiency programs and other displaced workers.

In addition, a full marketing campaign if needed, will be designed for this program that would include: Website, Facebook, and other social media venues, college marketing venues such as television stations, press releases, radio interviews and other areas as identified by the respective public relations departments.

L. Identification of similar programs at Wyoming Community Colleges and an overview of results of discussions with faculty and administrators at the relevant colleges regarding curriculum and possible joint projects:

There are no other similar programs in Wyoming. Utilizing a national curriculum model makes the curriculum consistent to many of the programs throughout the country.

Wyoming Community College Programs (Identify title, degree/certificate and number of credit hours)						
Casper College	Central Wyoming College	Eastern Wyoming College	Laramie County Community College	Northwest College	Northern Wyoming Community College District	Western Wyoming Community College
N/A	N/A	N/A	N/A	N/A	N/A	N/A

M. Note available program and course articulations with other likely transfer institutions in the region, particularly for transfer AA and AS programs. (Note regional Bachelor of Applied Science transfer options in addition to UW.)

This program is not designed for transfer.

N. When appropriate, note partnerships with business, industry, associations or agencies that have contributed to the design of the proposed program and/or who will contribute to the delivery of the program.

The LCCC HVAC program instructor has been working with a non-profit trade organization (HVAC Excellence) to align the program's competencies with national competency standards. Local advisory board member, specifically HVAC contractors and maintenance personnel, are providing input on technical needs for this particular region of the country. By using National and local input for the program, we will provide the best curriculum and learning environment for our students.

O. Assessment of student learning and complete follow-up per performance indicators. How will the assessment outcomes be used to assure student learning and improve the program?

Students will be able to:

The assessment of student learning consists of knowledge assessments given 3-4 times during the semester with a final knowledge assessment at the end of the semester. Weekly and daily assignments will provide guidance towards the assessment outcomes and areas of improvement. Along with the knowledge assessments, lab skill projects will be given and assessed for specific outcomes to backup knowledge skills. Many opportunities to practice lab skills will be provided to enhance the students learning success. Plans to implement HVAC industry certification graduation assessments are being developed to enhance the program's success.

P. Other program information or comments that would assist the commission in making a decision using the Guidelines for Use of this Evaluation Tool found in Appendix A of the 2010 WCCC Statewide Strategic Plan.

This program addresses Wyoming and regional interests in the following ways:

EDUCATED CITIZENRY – Through this accelerated program students may earn an Advanced HVAC/R Technician Certificate, thus increasing the number of post-secondary education certificates in Wyoming. In addition, the program supports high demand and high pay occupations, which improves the quality of life for our students and the clients who will be served by their skills.

DIVERSIFIED ECONOMY – This program helps build the technical skills required to support the changing skills required for energy related industries. Many of the fundamental skills developed through the electrical, mechanical and safety courses are relevant across industry.

WORKFORCE DEVELOPMENT – We developed the HVAC/R program curriculum from nationally recognized industry standards and input from the LCCC HVAC advisory board. We selected courses that respond to current and emerging technologies in the industry. The program will also ensure LCCC will be prepared for starting their HVAC/R licensing process.

EFFICIENT SYSTEMS – Career pathways coordinators are working closely with the HVAC/R instructor to align the skill sets of secondary school students with our program. The alignment will provide a seamless pathway for students from secondary to post-secondary education and on into the HVAC/R industry.

ACCOUNTABILITY and IMPROVEMENT – Course assessment data and course evaluations will be compiled by the program instructor. This data will be evaluated and analyzed by the advisory committee to help ensure continuous improvement. In addition, the college will utilize our Institutional Research Office to develop and deliver a post-job placement survey to both employers and students to identify skill gaps needed that may not have been included in the program. This information will help ensure the program is kept up to date and is meeting industry needs.

SIGNATURE PAGE

Submitted by V. P. for
Academic Affairs*

Signature Date

Printed Name Title

Approved by the WCC Academic
Affairs Council

Signature Date

Printed Name Title

Approved by Program
Review Committee

Signature Date

Printed Name Title

*Signature by the Community College Vice President for Academic Affairs verifies that institutional curriculum approval processes have been completed and that the Community College Board of Trustees has approved this program request as per institutional policy.